Assertion and factivity

Chapter 1

Assertion and factivity: Towards explaining restrictions on embedded V2 in Scandinavian

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Since Hooper & Thompson (1973), many researchers have pursued the insight that V2 is licensed by assertion. H&T categorise predicates depending on whether their complement can be asserted: e.g. communication verbs (*say*) permit the assertion of their complement, in contrast to factives (*be happy*). Simons (2007) proposes distinguishing between embedded propositions that do or do not constitute the Main Point of Utterance (MPU) – a sharpening of the notion of assertion: in question/response-sequences, the proposition answering the question is the MPU. Given this definition/diagnostic for assertion, factives *can*, given the appropriate discourse context, embed MPU and thus should allow embedded V2 (EV2). This paper presents two experiments testing whether factives can embed MPU and whether MPU licenses EV2 in Swedish. The results support both Simons's (2007) contention that factives can embed MPU, while providing new evidence that MPU does not correlate with EV2.

1 Introduction

The study of "Verb Second" (V2) has a long history in the literature on Scandinavian syntax (see review in Holmberg 2013). Although as a first approximation V2 is a phenomenon that is characteristic of root clauses, it has long been known that it occurs also in a restricted set of embedded clauses. What remains unresolved is a precise characterisation – and a fortiori a theoretical account – of this restricted distribution in embedded contexts. In this paper we present new experimental results concerning one aspect of

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the distribution of embedded V2, namely the constraints on where it can appear in the complement to various types of verb. At issue is whether such cases of V2 are sensitive primarily to local lexical constraints or are reflective of pragmatic factors concerning the status of the embedded clause in the larger discourse context.

All the Scandinavian languages exhibit V2 robustly in root clauses. Unlike German and Dutch, they are SVO languages and hence in many subject-initial clauses the V2 property is not unambiguously manifested. If a non-subject occurs in first position in a root clause, however, the finite verb must immediately follow it: hence (1) is an unambiguous example of a V2 clause in Swedish.

(1) Den här boken läste han inte.
this here book.DEF read he not
'This book, he didn't read.'

In the standard varieties of the Mainland Scandinavian languages there is an additional diagnostic. In contexts in which V2 is expected not to be found, such as embedded interrogatives or relative clauses, sentential negation precedes the finite verb.[1] In root clauses, however, the finite verb obligatorily precedes negation. This contrast is illustrated in (2).

(2) a. Det här är boken som han **inte läste**.
this here is book.DEF that he not read
'This is the book that he didn't read.'

b. Han **läste inte** den här boken.
he read not this here book.DEF
'He didn't read this book.'

It is standardly assumed, then, that negation in these languages occupies a position above that of the finite verb in a non-V2 sentence, but that part of the derivation of V2 involves movement of the verb to a higher position in the left periphery. Hence the V_{fin}<Neg order is standardly used as a diagnostic for a clause exhibiting V2.

As just stated, root clauses in Mainland Scandinavian contrast with relatives or embedded interrogatives in that these latter contexts disallow V2. However, as is well-known, in some cases V2 appears to be possible in embedded clauses, as in (3b):

(3) a. Han sa att han **inte hade** läst den här boken.
he said that he not had read this here book.DEF
'He said that he hadn't read this book.'

b. Han sa att han **hade inte** läst den här boken.
he said that he had not read this here book.DEF
'He said that he hadn't read this book.'

[1]The difference in this respect between these varieties and Icelandic in particular has been intensively researched in a series of independent and collaborative works by Anders Holmberg and Christer Platzack, see e.g. Platzack (1987); Platzack & Holmberg (1989); Holmberg & Platzack (1991; 1995); Holmberg (2010).

Such examples of embedded Verb Second (EV2) constitute a classic case of an "Embedded Root Phenomenon," and much of the discussion of the distribution of EV2 has relied heavily on the insights of Hooper & Thompson (1973) (H&T) – although H&T discussed only English. On the one hand, H&T established five different classes of predicates taking clausal complements, noting in particular that **factive** predicates did not license root phenomena in their complements.[2] On the other, H&T argued that this constraint on factive complements derived ultimately from the impossibility of such complements being **asserted**; the fundamental claim being that root phenomena in general are only possible in assertions, for reasons which H&T took to be essentially pragmatic.

In work on EV2 in Scandinavian ever since Andersson's (1975) classic dissertation, both of these aspects of H&T's analysis have been invoked. One important question is whether H&T were correct in their argument – revisited in recent corpus work by Jensen & Christensen (2013) – that the (claimed) ungrammaticality of root phenomena in factive complements is in fact an epiphenomenon, with the ultimate explanation being tied rather to assertion.

In this paper we discuss how the work of Simons (2007) gives us a way to address this question. Simons' concept of "Main Point of Utterance" (MPU) can be seen as a more precise characterisation of what H&T refer to as the "main assertion." We first provide experimental evidence, using Simons' Question-Answer paradigm, that manipulations of the discourse context can indeed influence what comprehenders take to be the MPU. We also confirm that embedded clauses, even under factives, can be the MPU (Experiment 1). Then we test whether that type of manipulation of the discourse context influences the acceptability of EV2 in Swedish or whether the acceptability of EV2 is determined solely by the class of the embedding predicate (Experiment 2). The results show that the acceptability of EV2 is sensitive only to predicate type, with no evidence for pragmatic variation dependent on MPU. The implications of these results are discussed in the final section.

2 The licensing of embedded verb second in Scandinavian

2.1 Factivity, presupposition, and assertion

The observation that embedded clauses can have the syntactic properties of root clauses goes back at least to Emonds (1970), but a central article that has inspired much subsequent work is Hooper & Thompson (1973). In this study of embedded root phenomena in English, H&T distinguish between five classes of predicates that take clausal complements, as summarised below. The acceptability of embedded root phenomena is argued to reflect these predicate classes, deriving ultimately from the extent to which material in the complement clause can be **asserted**.

[2] Here we follow H&T in our use of "factive" and "semifactive"; these two classes are now commonly referred to as "emotive factives" and "cognitive factives" respectively.

Class A predicates e.g. *say*, *report*, *be true*, *be obvious*. The verbs in this group are – with the possible exception of *vow* – all verbs of communication, while the adjectives express high degrees of certainty. These predicates can function "parenthetically", in which case the subordinate clause has been said to constitute the "main assertion" of the sentence. H&T maintain that root transformations are available *iff* the embedded clause consitutes the main assertion (p. 477).

Class B predicates e.g. *suppose*, *expect*, *it seems*, *it appears*. This group contains only verbs, which seem to fall into two subsets: verbs of thought, and impersonals. In this group also the predicates can function parenthetically, in which case the subordinate clause is likewise asserted. Class B predicates in English allow "Neg raising" and tag questions based on the subordinate clause.

Class C predicates e.g. *be (un)likely*, *be (im)possible*, *doubt*, *deny*. H&T do not offer a general characterization of this class of predicates, but comment that their complements are neither asserted nor presupposed, and that these predicates cannot be used parenthetically.

Class D predicates e.g. *resent*, *regret*, *be sorry*, *be surprised*, *be interesting*. These are the (emotive) factive predicates. Given H&T's assumptions about the relation between factivity, presupposition, and assertion, the use of these verbs entails that the complement of these verbs is presupposed, and cannot be asserted.

Class E predicates e.g. *realize*, *learn*, *discover*, *know*.[3] This group constitutes the semifactives, which presuppose/entail the truth of their complements only in some environments – in particular, this presupposition can be lost in questions and conditionals (Kiparsky & Kiparsky 1970).

H&T make the empirical claim that embedded root phenomena in English are impossible in the complements of Class C and Class D predicates. They then argue that this follows from the fact that in neither case can the complement be asserted; assertion is, on their assumptions, incompatible with presupposition (and hence with factivity, since factives presuppose the truth of their complements). Problematically for H&T's analysis, but as they themselves observe, root phenomena in English can occur in the complement to semifactive verbs even in the environments in which they behave like factives (e.g. when they occur in non-modal, declarative contexts). As pointed out in Wiklund et al. (2009), and as will be discussed further below, the same holds for embedded V2 in Scandinavian. H&T also claim that for non-factive predicates in classes A and B, embedded root phenomena are possible if and only if the embedded clause constitutes the **main assertion** of the sentence. H&T then argue that assertion licenses the root phenomena they are investigating in English because all these phenomena involve emphasis, and "emphasis would be unacceptable in clauses that are not asserted" (p. 472). There are problems for this last link in their argument (for some discussion see e.g. Heycock

[3] Whether *know* should be grouped together with the semifactives is highly contentious; here we take no position on this.

2006). However, their observation about the absence of root phenomena from factive complements in particular, and, conversely, the association of such phenomena with some notion of "assertion" has had a lasting influence.

Despite this, the term "assertion" itself has largely been abandoned in recent literature. As Simons et al. (2010: 1041) points out, the point of clause embedding is often precisely to indicate the weakness of the speaker's commitment to the proposition expressed, whereas assertion is generally taken to involve a strong commitment. Observe, for example, the lower speaker commitment conveyed in (4) compared to (5):

(4) I believe that it will rain tomorrow.

(5) It will rain tomorrow.

Still, we want to capture the intuition that in (4), the main proposition conveyed by the speaker is typically the proposition that it will rain tomorrow (and not that the speaker has a belief about the rain tomorrow). Simons (2007) introduces the concept "Main Point of Utterance" (MPU) for this purpose.[4] She provides the following working definition of MPU:

> [T]he main point of an utterance U of a declarative sentence S is the proposition p, communicated by U, which renders U relevant. […] To sharpen intuitive judgments, we will utilize question/response sequences as a diagnostic for main point content. I assume that whatever proposition communicated by the response constitutes an answer (complete or partial) to the question is the main point of the response. (Simons 2007: 1035–1036)

This definition provides a useful tool for identifying the MPU in an utterance. Importantly, it makes MPU a property relative to a discourse, rather than to a sentence, as illustrated in (6) and (7):

(6) Q. Why didn't Kate come to the party?
A. John thinks that she's left town.

(7) Q. Why didn't John invite Kate to the party?
A. He thinks that she's left town.

(6-A) and (7-A) are formally identical, expressing the proposition that John thinks that Kate has left town. Where they differ is precisely at the level of MPU. Following Simons (2007: 1037) (6-A) can be paraphrased as "The answer to your question why Kate didn't come to the party may be that she has left town. I'm saying this based on what John told me that he believes to be the case.", and (7-A) as "The answer to your question why John

[4] We will keep to the convention of referring to verbs of communication and cognition such as *say*, *claim* and *think*, which generally accept MPU-complements, as "assertive". However, we will use the term MPU, rather than "assertion", when referring to the discourse status of the proposition expressed by the embedded clause.

didn't invite Kate to the party is that he thinks that she was out of town and therefore would be unable to attend." In (6-A), the root clause *John thinks* has a parenthetical, essentially evidential use, qualifying the speaker's claim that Kate is out of town.[5]

We now return to the question of why some, but not other predicates appear to be felicitous when used with this discourse function. Compare, for example, (8) and (9):

(8) a. When does the game start?
b. I think that it starts at 10.

(9) a. When does the game start?
b. I know that it starts at 10.
c. I'm happy that it starts at 10.
d. I regret that it starts at 10.

As discussed above, according to Hooper & Thompson (1973) and Hooper (1975), clause-embedding factives (such as *be happy* and possibly *know*) cannot be used parenthetically in this way, that is, with the main assertion being the embedded clause. They take this to be because the factive predicate **presupposes** the embedded proposition. That is, the embedded proposition is taken to be part of the conversational common ground, and therefore cannot be used to update the common ground (by adding propositions to it, in the sense of Stalnaker 1974, 2002). In essence, this is to claim that a factive complement cannot be the MPU. Interestingly however, as already mentioned, Hooper & Thompson (1973) note that semifactives, which can lose their factivity in questions and in the antecedents of conditionals, *can* be used parenthetically even in contexts where their factivity is retained. H&T demonstrate this by showing that, for example, a tag question can be formed from the complement to such a verb, which they take to indicate that this complement is the main assertion; they contrast this with the behaviour of a true factive. The following examples are H&T's examples (129) and (131):

(10) (Hooper & Thompson 1973: 481)
I see that Harry drank all the beer, didn't he?

(11) (Hooper & Thompson 1973: 481)
*I am sorry that Suzanne isn't here, is she?

Simons (2007) makes the same point by demonstrating that the complement to a semifactive like *discover* can constitute the MPU. The following is her example (21a):

[5]The observation that embedding verbs can be used parenthetically is originally due to Urmson (1952: 484) who explains the parenthetical use as "priming the hearer to the emotional significance, the logical relevance, and the reliability of our statements."

(12) (Simons 2007: 1045)

Q: Where did Louise go last week?

A: Henry discovered that she had a job interview at Princeton.

Simons' conclusion is that semifactives show us that presupposition and factivity must be disassociated. Presuppositions are treated by the speaker as part of the conversational common ground. In contrast, factivity is the entailment of the truth of the embedded proposition. For parenthetical assertives, like *think* or *say*, the complement is neither presupposed nor entailed. In (12-A) on the other hand, the complement is entailed (Henry could not have discovered that Louise had a job interview at Princeton unless she did in fact have such an interview), but it is not presupposed. That is, it provides discourse-new information, serving the function of updating the conversational common ground (it is the MPU).

A question that naturally arises from this observation is the following: if factivity does not block MPU (that is, if factivity does not entail presupposition), why is it that *true* factives (like *know*, *regret* and *be happy*), unlike semifactives (like *discover* and *realize*) resist MPU-complements, as exemplified by the infelicity of (9d)? In other words, what is it about factives, that is not the property of factivity itself, that render these infelicitous as parentheticals? A plausible answer to this question comes from Simons (2007). She appeals to what is an essentially Gricean reasoning process to explain how parenthetical uses of embedding predicates come about. In (13) we sketch an outline of the pragmatic process which, according to these authors, underlies the parenthetical use of *think* in (6) above.

(13)
- The response to the question "Why didn't Kate come to the party?" in (6) contains two propositions, *p*: *John thinks q*, and *q*: *Kate has left town*. Only *q* directly answers this question.
- Assuming that the speaker is being cooperative, and intends to answer the question in a conversationally appropriate manner (given Quantity, Relevance etc.), the hearer infers that the speaker must have some reason for not directly asserting *q*. Such a reason could be that she does not have sufficient evidence for directly asserting *q*. However, *p*, indicating that John is the source of *q*, allows the speaker to offer *q* as a possible answer to the question.

The restriction on factives as parentheticals now follows quite naturally (Simons 2007: 1049-1050). The following is from her example (37):

(14) (Simons 2007: 1050)

a. Where did Louise go yesterday?

b. Henry forgot that she went to Princeton.

c. Henry remembered that she went to Princeton.

As shown in (14), these matrix clauses are problematic as parentheticals. It is not clear how Henry's forgetting or remembering that Kate has left town is relevant to the question just asked (though see example (18) for a question that makes such information relevant). The responses thus present a violation of Grice's (1975) Maxim of Quantity, in that they provide the hearer with considerably more information than the question asked for. Further, consider the case of *know*. The following is from Simons's (2007) example (35):

(15) (Simons 2007: 1049)
   a. Where was Louise yesterday?
   b. ??Henry knows that she was in Princeton.

The meaning of *know* is essentially to express a strong commitment to the truth of its complement. However, this is also the function of directly asserting the proposition. Hence, it is not clear what non-redundant discourse function would be achieved by embedding the proposition under *know*. In effect then, it is not the factivity *per se* that renders the utterance bad, but rather the lack of relevant communicative content contributed by the matrix clause.

This point can be further illustrated with an "assertive" matrix predicate. Imagine someone blurting out, out of the blue:

(16) I say that I will go and get a coffee.

A hearer might wonder what the purpose of the embedding is, given that the matrix clause does not fill any clear conversational purpose beyond what would be accomplished simply by asserting "I will go and get a coffee." However, given an appropriate discourse context, factives like *know* and *forget* can be assigned felicitous parenthetical readings. The following examples are Simons's (2007) (36) and (39):[6]

(17) (Simons 2007: 1050)
   Q: Where was Louise yesterday?
   A: Y'know she had to go to Princeton.

(18) (Simons 2007: 1050)
   Sorry, we're going to have to change our plans for dinner tonight.
   a. Henry forgot that he has an evening appointment.
   b. Henry just realized/remembered that he has an evening appointment.

In (17), *know* fills a non-evidential parenthetical function. Roughly, the answer can be paraphrased as "Louise had to go to Princeton yesterday, and you know that already (so

[6]Note also that with appropriate stress placement, a sentence like "I know that she's in *Princeton*" and a continuation like "...but I don't know if that answers your question?", would render *know* much more natural in answering a question like (15) (see Simons 2007: 1049).

you shouldn't be asking)." (Compare with a slightly modified version of (16): "I said that I will go and get a coffee!" whereby the embedding is understandable and non-redundant if the speaker is trying to highlight that the hearer was not listening.) In (18a,b) on the other hand, the speaker is citing Henry's evening appointment as the reason for changing the dinner plans. Here, *forget/realize/remember* fill the relevant discourse function of informing the hearer of the reason for not telling her earlier. Simons uses examples like (17) and (18) to support her claim that a factive can function parenthetically in an appropriate discourse context, such that its embedded clause acts as the main assertion. Our first study tests this claim experimentally.

2.2 (Non)factivity or MPU as a factor for embedded verb second

We have summarised above aspects of the proposal in Simons (2007), according to which H&T's concept of "main assertion" is replaced by that of "Main Point of Utterance," and MPU in turn is argued to be a conversational property of utterances in context, sensitive both to properties of the discourse, as well as to a number of linguistic factors that we have not discussed here. As shown above, under this view – in contrast to that of H&T – factivity is not incompatible with MPU status. While neither H&T nor Simons discuss data from any language other than English, there is a tradition that dates back at least as far as Andersson (1975) of taking Embedded Verb Second (EV2) in Scandinavian to be another type of "Embedded Root Phenomenon". EV2 is known to be sensitive to a variety of factors (see e.g., Zwart 1997), but of interest here is how its distribution can be analysed along the lines set out in H&T. Given Simons' argument that the lexical semantic property of (non-)factivity can be teased apart from the discourse pragmatic property of being the MPU, the question evidently arises as to which of these is relevant to the licensing of EV2.

Clearly, one possible hypothesis is that the crucial concept for the distribution of EV2 in Scandinavian is MPU, and that any apparent association with non-factivity is due to the greater ease – given the interaction between lexical meaning and discourse contexts – with which non-factive verbs can embed the MPU. This hypothesis is put forward explicitly in Jensen & Christensen (2013), a corpus study of EV2 in Danish. Jensen & Christensen (2013) state as their hypothesis that "V>Adv [EV2 order] signals foregrounding of the subordinate clause, i.e. that its content is the main point of the utterance." However, they do not code for MPU in any direct way, while they do code for (among other factors) the "type of the matrix predicate," described as an operationalization of H&T's five classes of predicates, with the addition of a class of "Causatives" and a residual "Other" class.[7] They discover a clear effect of predicate type, but interpret it as supporting their MPU hypothesis (note that they intend their use of "foreground" to mean the same as MPU (p. 40)):

> [...] both Factive and Causative matrix predicates, *as expected from the hypothesis of V>Adv as a foregrounding signal* [our emphasis], clearly disfavour V>Adv

[7] H&T's Class C was not coded for as it turned out there were virtually no tokens of this class in their corpus (p. 50).

> word order […] Subclauses governed by communicative predicates [Class A] are significantly more disposed to V>Adv word order than subclauses governed by cognitive predicates [Class B], which are again significantly more disposed to V>Adv than Other predicates. *This, again, supports the hypothesis of V>Adv as a foregrounding signal, since we would expect communicative predicates to frequently govern subclauses that are foregrounded*, [our emphasis] even when they do not contain any explicit signals of being quotes […] Cognitive predicates will often introduce something important that the speaker or some other person knows or has learned, *and these would then be foregrounded* [our emphasis]. (Jensen & Christensen 2013: 50)

So while their hypothesis is clearly that EV2 (or at least, the V>Adv order that we take to be one manifestation of this structure) is a signal of MPU, they in fact have only indirect evidence for this (essentially as was the case also for H&T).

Another author who could be read as adopting the hypothesis that MPU is the crucial concept for licensing EV2 in Scandinavian is Julien (2009; 2015), although this is less clear. In both papers Julien argues that EV2 signals assertion, but it is not always clear how assertion is defined (and hence diagnosed). As a result the extent to which her understanding of this might differ from Simon's definition of MPU is not always clear. In Julien (2009) the term MPU is never used, and Simons' work is not referenced; in Julien (2015) she argues explicitly against the relevance of MPU, although her argument mainly bears on the particular use of the concept in Wiklund et al. (2009), to be discussed shortly.[8]

One possible hypothesis, then, is that EV2 is directly licensed by, or signals, MPU status – a status that under the account of Simons (2007) is determined relative to a discourse. The alternative is that lexical semantic properties of the embedding predicates – (non)-factivity being at least one such property – are directly responsible for the possibility of EV2 in the embedded clause. A version of this alternative hypothesis can be found in Wiklund et al. (2009). Using the predicate classes identified by H&T, and taking as their data their own judgments (supplemented in some cases with those of a small number of other linguists), rather than a corpus, Wiklund et al. (2009) argue that EV2 is grammatical under assertives (Classes A and B) and semifactives (Class E), but not under

[8] One important aspect of Julien's proposal which does clearly distinguish it from one which links EV2 exclusively to MPU status (as for example is the case in Jensen & Christensen 2013) is that she essentially allows for two ways in which EV2 might be licensed. On the one hand, a clause with EV2 may be a "direct assertion," that is, one attributed to the speaker. This comes very close to – or is perhaps identical to – the concept of the embedding predicate having an evidential, parenthetical interpretation (see the discussion in Section 2.1 above). On the other, a clause with EV2 may be the report of an assertion made by the person denoted by the subject of the embedding verb. This predicts that EV2 would be possible in a context like the following, for example, where the Jensen & Christensen (2013) hypothesis would exclude it, since the embedded proposition – that the world is not round – can be taken to be an assertion of Jasper's, but is clearly not intended to be added to the common ground by the speaker:

Q: Why do you think Jasper isn't so bright?

A: He said that the world is not round. What an idiot!

factives (Class D) or the class of non-assertive, non-presuppositional predicates (Class C). Examples below are from Wiklund et al. (2009: 1918–1921).

(19) (Wiklund et al. 2009: 1918–1921)
Han sa att han **kunde inte** sjunga på bröllopet.
he said that he could not sing at wedding.DEF
'He said that he could not sing at the wedding.' Assertive Class A

(20) (Wiklund et al. 2009: 1918-1921)
Han trodde att vi **hade inte** sett den här filmen.
he believed that we had not seen this here film.DEF
'He believed that we hadn't seen this film.' Assertive Class B

(21) (Wiklund et al. 2009: 1918-1921)
*Han tvivlar på att hon **har inte** träffat den här mannen.
he doubts on that she has not met this here man.DEF
'He doubts that she hasn't met this man.' Non-assertive Class C

(22) (Wiklund et al. 2009: 1918-1921)
*Han ångrade att han **hade inte** sjungit.
he regretted that he had not sung.
'He regretted that he hadn't sung.' Factive Class D

(23) (Wiklund et al. 2009: 1918-1921)
Jag upptäckte att jag **hade inte** läst den.
I discovered that I had not read it.
'I discovered that I hadn't read it.' Semifactive Class E

Given that EV2 is possible under semifactives – crucially, even in contexts where their factivity is preserved – factivity cannot be what restricts the availability of EV2. Wiklund et al. (2009: 14) invoke instead the concept of MPU from Simons' work. However, this does not mean that they claim that MPU status is what licenses or is signalled by EV2. First, while they follow Simons (2007) in that they take MPU to be the proposition in an utterance which is used to update the common ground, and which can be diagnosed by the question/answer-pairs discussed above, their understanding of MPU is in fact crucially different from that of Simons (2007). They state:

> Those *predicate classes* [our emphasis] which may not embed an MPU are exactly those that impose restrictions on V2 in the embedded clause (Class C and D). In other words, MPU-compatible environments correspond to environments where V2 is unrestricted in all four varieties of Scandinavian investigated here. (Wiklund et al. 2009: 1927)

That is to say, whereas Simons argues that MPU is a property of utterances, not predicates, Wiklund et al. take possible environments for MPU to be lexically defined, in that MPU is licensed by assertives and semifactives, but not by factives.

The second way in which the approach of Wiklund et al. (2009) departs from an account that really depends on the notion of MPU is that they state clearly that the relation between MPU and EV2 is only indirect. That is, EV2 and MPU are licensed in the same structural domain – ForceP – that is selected by assertives and semifactives, but not by factives, which select a smaller clause, incompatible with both EV2 and MPU (2009: 1930). However, they argue that verb-movement and interpretation as MPU are both optional, and independent, properties of ForceP: hence it is possible for an MPU-clause to be V-in situ (EV3), and for an EV2-clause to not be the MPU. This much weaker linkage between the two is motivated by the following type of judgments (Wiklund et al. 2009: 1927):

(24) Varför kom han inte på mötet igår?
'Why didn't he come to the meeting yesterday?'

a. Vi upptäckte att han **hade** tyvärr **inte** fått på vinterdäcken ännu.
we discovered that he had unfortunately not put on winter-tires.DEF yet

b. Vi upptäckte att han tyvärr **inte hade** fått på vinterdäcken ännu.
we discovered that he unfortunately not had put on winter-tires.DEF yet
'We discovered that he unfortunately hadn't changed to winter tires yet.'
(Wiklund et al. 2009: 1927)

They argue that since both (24a) and (24b) are possible in response to the question – which provides a context that makes the embedded clause in the answer the most plausible MPU – it must be the case that MPU does not require EV2 syntax. Conversely, they also cite examples where the MPU is *not* the embedded clause, but EV2 is still possible, so there is not even a one-way implication:

(25) a. Varför kom han inte på festen?
why came he not to party.DEF
'Why didn't he come to the party?'

b. Kristine sa att han **fick inte**.
Kristine said that he was-allowed not
'Kristine said that he wasn't allowed to.'
(Wiklund et al. 2009: 1929)

According to Wiklund et al. (2009: 1929), the answer in (25b) is ambiguous; crucially, it can have the interpretation that one reason for the person in question not coming to the party was that Kristine said something – that is, a reading where the MPU is not the embedded clause, even though this unambiguously displays EV2 word order.

For these reasons, even though Wiklund et al. (2009) explicitly invoke Simons´ work, in fact the concept of MPU as presented there plays no explanatory role within their hypothesis; rather, their approach predicts that the possibility – but not the presence in any given example – of EV2 is determined by the lexical class of the embedding predicate.

The hypothesis that MPU, as described in Simons (2007), is directly responsible for the occurrence of EV2 in Scandinavian has been put forward most unambiguously in Jensen & Christensen (2013), referred to above. However, as they did not code their corpus data for the kind of contextual cues that might enable us to determine whether any given example of EV2/EV3 is in fact an instance of embedded MPU or not, their evidence for this hypothesis is at best indirect. Since contexts in which the status of an embedded or root clause as MPU is unambiguous are likely to be hard to find in a corpus, Experiment 2 aims to test this hypothesis with an experimental paradigm in which we manipulate MPU and class of embedding predicate independently, making use of the Question–Answer paradigm proposed in Simons (2007).[9]

3 Experiment 1: Factivity & MPU in English

This experiment tests whether it is possible to manipulate the discourse in order to 'coerce' an embedded-MPU interpretation of sentences that typically strongly disfavour this reading, that is, where the clause-embedding predicate is factive. In other words, given an appropriate discourse context, can factives be used parenthetically, as Simons claimed? Following the above authors, we identify the MPU as the proposition in an answer that provides the most direct answer to the question, as illustrated in (6) and (7) above, repeated here:

(26) Q. Why didn't Kate come to the party?
A. John thinks that she's left town.

(27) Q. Why didn't John invite Kate to the party?
A. He thinks that she's left town.

As there is no reason to expect that Swedish speakers and English speakers should differ in their pragmatic (by hypothesis, Gricean) reasoning, we conducted this experiment with English-speaking participants, who were easier to recruit given their greater numbers. The experiment asked participants to make a judgment about how directly a particular response answered a preceding question. We manipulated both the question posed in the preceding discourse context as well as properties of the response. When the response contained an embedded clause, the embedding verb was either factive or non-factive. The question-response pairs thus created conditions that favoured a reading in which the response's embedded clause served as the MPU under a factive verb.

[9] In essence, what we do in Experiment 2 is to systematically gather judgment data of the kind reported in the few examples of such question-answer pairs discussed in Wiklund et al. (2009).

3.1 Methodology

3.1.1 Participants

Forty seven native speakers of English participated in the study. The participants were recruited on Amazon's Mechanical Turk, a crowd-sourcing tool for recruiting workers who can be paid anonymously for small amounts of work (for review of Mechanical Turk in cognitive science research, see Munro et al. 2010). Participants were paid 8 USD per hour for their participation.

3.1.2 Materials

All items consisted of short dialogues between two speakers. Each experimental item occurred in 6 conditions: 2 question types × 3 response types.

(28) **Background**:
I hear that you went to Paris last summer.
Question: specific content condition:
What was the city like?
Question: general experience condition:
How was it?
Response: Unembedded:
The city was really great.
Response: Non-factive embedding verb:
I got the impression that the city was really great.
Response: Factive embedding verb:
I was surprised that the city was really great.

By varying the question, we can see whether participants are sensitive to the discourse context in assessing an utterance. Taking the unembedded condition as a baseline, participants are expected to rate that response (*The city was really great* in (28)) as a more direct answer to the specific content question than to the general experience question because the content of the response directly matches the wording of the former question but not the latter. Likewise in the responses with embedding, the match between the wording of the specific question and the content of the embedded clause in the response is expected to yield higher directness ratings for the specific question than the general experience question.

By varying the response type, specifically the embedding verb, we can test Simons' claims about how participants treat the information embedded under factives by comparing the factive response to the other two response types. The non-factive condition contained predicates that detract from the speaker's commitment to the embedded content (either *I got the impression* or *it seemed to me*). This hedging is predicted to yield lower directness ratings because the speaker is not committed to their answer to the question posed. This condition contrasts with the unembedded response in which the

speaker strongly commits to an answer. The question then is how participants will assess responses that contain a factive embedding verb (here, *be happy, be disappointed, be relieved* or *be surprised*). If factives can be used parenthetically, then a response like *I was surprised that the city was really great* should constitute a direct answer to the question about what the city was like, similar to an unembedded response. If factives resist embedded MPU, the factive responses are predicted to receive lower directness ratings, similar to those assigned in the non-factive response condition.

The experiment included 24 experimental items and 24 fillers. The fillers were of the same general format as the experimental items: 6 of the fillers involved a relevance violation, 6 involved a presupposition violation, and the remaining half were equal parts acceptable Factives and acceptable Non-Factives. The 48 items were pseudo-randomized across lists, such that each participant saw each item only once, and all conditions were equally represented in each list.

3.1.3 Procedure

Participants viewed each dialogue and then were prompted with "The response addressed the preceding question:". They were given the alternatives "Not at all", "Somewhat Indirectly", "Indirectly", "Somewhat Directly" and "Directly". The participants were told that there was no correct answer, and instructed to choose the option that corresponded best to their intuition about the answer. Participants were further instructed to read the entire dialogue before providing their rating, and not to go back and revise their answers to previous questions.

3.1.4 Analysis

In order to establish which manipulated factor most strongly impacts participant ratings, directly or in conjunction with another factor, the raw scores were analyzed with linear mixed effects models in R. The full model contained fixed effects of question type, response type, and their interaction, with participants and items as random effects. This type of mixed-effect modeling for statistical analysis is standard in psycholinguistics, as is the recasting of the qualitative scale as numeric scores ("Not at all"=1... "Directly"=5). Question type was centered. For the 3-level factor of response type, the factive condition was coded as the baseline in order to test whether the factive responses yield ratings that are more like the unembedded responses or the non-factive responses. Each fixed effect is tested for significance comparing a model which lacks that fixed effect to the full model. For the 3-level fixed effect and its interaction, p-values are derived from a subset model comparing factives with either non-factive or unembedded responses.

3.2 Results

The ratings for the 6 conditions are illustrated in Figure 1. The three lines show the three response types (factive predicates vs. non-factive predicates vs. unembedded responses).

All receive higher directness scores when the question is specific rather than general (confirmed as a main effect of question type in the statistical analysis: $p<0.001$).

Of primary interest is how the responses containing factive predicates compare with other response types. The results show that these responses pattern with the direct unembedded responses (in a model of the subset of the data excluding non-factives, the directness ratings for unembedded responses are not significantly higher than for factive responses: $p=0.54$) and differ from the hedged indirect responses (same modeling technique, significant difference between factive and non-factive: $p<0.001$). This lends experimental support to Simons' claim that factives can be used parenthetically in a sufficiently supportive discourse context.

We did not specifically predict an interaction between question type and response type, but the effect of question type is bigger for unembedded responses ($p<0.05$) and for non-factives ($p<0.05$), compared with factive responses. This pattern appears to arise because of the relatively high directness ratings assigned to the factive responses in the general question condition (making the difference between the two question types smaller for the factive condition than for the other two conditions). This may reflect an interpretation of the general question 'How was it?' as seeking information about the speakers' own experience, in which case reporting that one was surprised (or happy or disappointed or relieved) adds to the relevance (and hence directness) of that response for that question.

Given that discourse contexts can be manipulated such that factives do appear to license MPU, the next experiment tests whether a discourse context manipulation that shifts MPU can also influence the acceptability of EV2 in Swedish.

4 Experiment 2: Swedish embedded V2

Acceptability judgments were elicited from native Swedish speakers in a $4 \times 2 \times 2$ design that manipulated MPU (main vs. embedded clause), verb class (communicative assertive, epistemic assertive, (emotive) factive, (cognitive) semifactive), and word order (EV2 vs. EV3).[10] Since the consensus among researchers appears to be that EV2 is optional even when it is permitted, EV3 word order is predicted to be generally more acceptable than EV2. If MPU is lexically defined, we predict a word order $\times$ predicate class interaction whereby EV2 is acceptable only under assertives and under semifactives (see Wiklund et al. 2009). Alternatively, if MPU is a property of utterances in context, we predict a word order $\times$ MPU interaction whereby EV2 is more acceptable when the context signals that the embedded clause is the MPU (see Jensen & Christensen 2013).

[10] In order to keep the questionnaire to a manageable length, we did not include examples of Class C predicates (e.g. *deny*, *doubt*, etc).

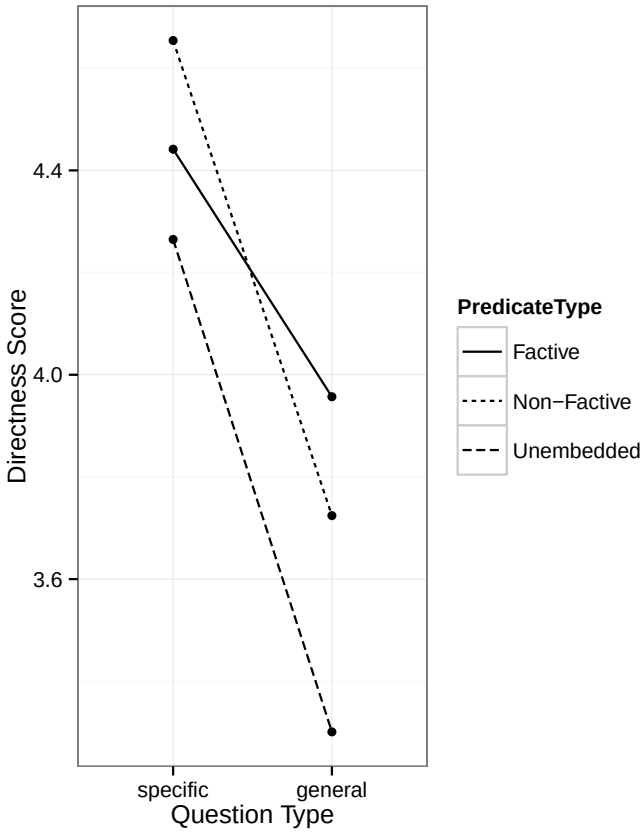

Figure 1: Directness ratings in Experiment 1 by question type (general vs. specific) and response type (factive vs. non-factive vs. unembedded)

4.1 Methodology

4.1.1 Participants

A group of 118 Swedish-speaking students (age 18–19) from a senior high school in the northern Swedish city of Umeå participated in the study. All participants were volunteers.

4.1.2 Materials

Each item consisted of a 3-utterance passage. For the 16 experimental items, these passages contained a background sentence, a question to establish MPU for the target sentence, and the target sentence itself, as in (29). The background sentence introduced two

individuals. The second utterance posed a question about one of those two individuals. The target sentence mentioned one individual as the subject of the matrix clause and one as the subject of the embedded clause.

The MPU manipulation was achieved via the combination of the question posed and the positions of mention of the two individuals in the target sentence. In (29), the target sentence mentions Carina as the matrix clause subject and Albin as the embedded clause subject. The question to trigger main clause MPU therefore asks about Carina; the embedded clause MPU trigger asks about Albin. The word order manipulation was indicated via the position of negation relative to the verb. Both MPU and word order were manipulated within items. With this design, each passage could be minimally varied to construct 4 conditions (MPU-matrix:EV2, MPU-embedded:EV2, MPU-matrix:EV3, MPU-embedded:EV3).

(29) **Background**:
Lille Albin och hans mamma Carina gick och såg en film på bio.
'Little Albin and his mother Carina went to see a movie in the cinema.'
Embedded Clause MPU Trigger:
Hur upplevde Albin biobesöket?
'How did Albin find the visit to the cinema?'
Main Clause MPU Trigger:
Hur upplevde Carina biobesöket?
'How did Carina find the visit to the cinema?'
Target:
Carina gissade att han (**hade**) nog inte (**hade**) väntat sig så mycket
Carina guessed that he (had) maybe not (had) expected self so much
action.
action
'Carina guessed that he probably hadn't expected that much action.'

The remaining manipulation of predicate class of the embedding verb was between items (4 items for each of 4 predicate classes). The predicates were classified according to Hooper & Thompson's scheme, omitting their Class C: (communicative) assertive, (epistemic) assertive, factive (emotive), semifactive (cognitive).[11] The predicates we used for each group are listed in Table 1.

The experiment consisted of 16 experimental items mixed with 16 fillers. Fillers consisted of passages in the same 3-utterance format and their complexity roughly matched the experimental items, with embedded complement clauses and relative clauses. The fillers varied as to whether they were fully grammatical (n=8), fully ungrammatical (n=4), or pragmatically infelicitous (n=4).

[11]Communicative and epistemic assertives are sometimes labeled "weak" and "strong" assertive Wiklund et al. (2009). However, it is not at all clear to us that strength of assertion, in any straightforward understanding of the concept, is the relevant variable: rather the verbs in Class A are verbs of communication, while those in Class B are verbs of thought or cognition.

Table 1: The clause-embedding predicates used in the experiment, by predicate-type.

	Assertive (communicative)	**Assertive (Epistemic)**	**Factive**	**Semifactive**
Group 1	*säga* say	*anta* suppose	*vara lättad* be relieved	*upptäcka* discover
Group 2	*berätta* tell	*förmoda* assume	*vara glad* be happy	*märka* notice
Group 3	*förklara* explain	*gissa* guess	*vara ledsen* be sad/sorry	*komma fram till* arrive at
Group 4	*hävda* claim	*vara säker* be sure	*vara förvånad* be surprised	*få veta* come to know

So as not to repeat verbs across items, only 16 experimental items were constructed. Each participant saw all 16 items and therefore saw each of the 16 conditions only once. Because of this, a large number of participants were recruited. The 16 experimental items were assigned to conditions in a Latin Square design such that, across 4 lists, each item was presented in each MPU × word order condition once and each participant saw each condition once.

4.1.3 Procedure

The experiment was conducted as a pen and paper task in a classroom setting. The experimenter provided participants with a booklet containing the instructions and passages (all in Swedish). Participants were instructed to judge the acceptability of the passages on a scale from 1 to 6, where 1 represented **unacceptable**, and 6 represented **fully acceptable**. Each passage appeared on a page by itself with a question asking participants to "Indicate how natural you consider the answers to the questions to be." The task took roughly 20 minutes.

4.1.4 Analysis

The raw scores were analyzed with linear mixed effects models in R, with participants and items as random effects. Maximum random effect structure was used (Barr et al. 2013). The word order and MPU conditions were centered, and predicate class was contrast coded. We conducted likelihood-ratio tests between mixed-effects models differing only in the presence or absence of a fixed main effect or interaction. We report the p-values derived from the model comparisons.

4.2 Results

Judgments from 6 non-native Swedish speakers were removed. In addition, 8 participants whose judgments failed to distinguish the grammatical and ungrammatical fillers were excluded. 20 requested judgments (1%) were left blank. The remaining dataset consisted of 1644 judgments on experimental items from 104 native speakers.

The results from Experiment 2 are illustrated in Figure 2. As predicted, EV3 receiving higher ratings than EV2 (main effect of word order: $p<0.001$). In addition, higher ratings were assigned to passages that contained semifactive and communicative assertive embedding verbs (main effect of predicate class: $p<0.001$). This main effect of predicate class was driven by a word order × predicate class interaction ($p<0.001$): As predicted under an account in which MPU is lexically defined and the embedding verb directly influences the acceptability of EV2, ratings for EV2 were almost as high as for EV3 for the class of communicative assertives and the class of semifactives. There was no main effect of MPU ($p=0.88$), and contrary to a context-driven account of the role of MPU in EV2, there was no interaction with MPU ($p's>0.75$).

Given Julien´s claim that – regardless of the MPU – a speaker can use EV2 when reporting a 3rd party's assertion, and the higher frequency of EV2 reported by Jensen & Christensen for communicative assertives over epistemic assertives in their Danish corpus, we tested whether the acceptability of EV2 is higher for communicative assertives than epistemic assertives. A model of the data across those two predicate classes shows a word order × predicate class interaction ($p<0.001$) whereby the acceptability of EV2 is indeed much higher for communicative assertives than epistemic assertives. This interaction appears alongside a main effect of word order ($p<0.001$), a main effect of predicate class ($p<0.001$) and non-significant effects and interactions for MPU ($p's>0.68$). This result, which matches the frequencies of EV2 in Danish reported by Jensen & Christensen, lends support to Julien´s claim.

These results support the claim that Swedish EV2 is possible under semi-factive (*discover/realize*) and non-factive (*think/claim*) clause-embedding predicates, but not under purely factive ones (*be happy/be surprised*) (Wiklund et al. 2009). However, the results show no interaction between word order and MPU. That is, our data suggest, contra Jensen & Christensen (2013), that the low acceptability of V2 under factives cannot be explained by the twin hypotheses that MPU licenses EV2 and that factives cannot embed MPU. Even if we set aside the factives, there was no effect of MPU when the embedding predicate was a non-factive or a semi-factive. There is no controversy in the literature about the ability of these predicates to embed the MPU. But even in these contexts, participants did not rate the use of EV2 any higher in the embedded-MPU condition. Our results therefore suggest that MPU is not relevant, and a different account is needed to explain the unavailability of EV2 under factives.

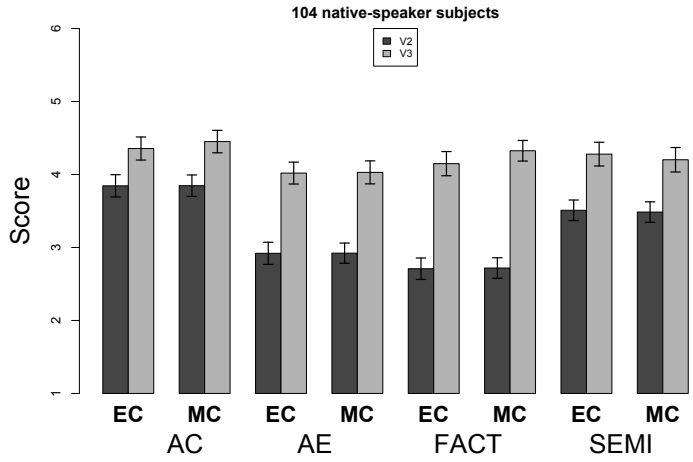

Figure 2: Acceptability judgments of target sentences in Experiment 2, broken down by MPU (Main Clause (MC), Embedded Clause (EC)), Predicate Class (communicative assertive (AC), epistemic assertive (AE), factive (FACT), semi-factive (SEMI)), and Word Order (V2, V3).

5 Discussion and conclusion

In this paper we have described two experiments that bear on the relation between "assertion," factivity, and the distribution of one classic case of an embedded root phenomenon: embedded Verb Second (EV2) in Swedish. As discussed in Section 2.1, although Hooper & Thompson (1973) classified complement clauses licensing or disallowing root phenomena in terms of the semantic properties of the embedding predicates, and the lexical classes that they set up have been extensively referred to in the subsequent literature, their explanation for the effect of these embedding predicates was a functional/pragmatic one. For example, factives were argued to disallow root phenomena in their complements because their complements were presupposed, and hence could not be **asserted**. Indeed, H&T argued that even predicates in classes that allow embedded root phenomena only do so when their complement is in fact the "main assertion" of the utterance, and the embedding predicate is being used parenthetically – see for example their discussion of the contrast between (30a) and (30b), their (67) and (68).

(30) (Hooper & Thompson 1973: 476)

a. *That never in his life has he had to borrow money is true.

b. It's true that never in his life has he had to borrow money.

In their recent corpus work, Jensen & Christensen (2013) have essentially adopted this explanation for the distribution of EV2 in Danish.

As discussed in the same section, the work of Simons (2007) has provided a way to test whether indeed the effect of the embedding predicate is only epiphenomenal, as argued by Jensen & Christensen, since we should be able to manipulate MPU independently of the class of the embedding predicate. In Experiment 1 we tested Simons' claim that factives can be used parenthetically. As reported in Section 3.2, our experiment supports Simons' claim. First, the contrast in participants' judgments on the directness of the answer depending on the question type shows that we were successful in manipulating the discourse context to change what they took to be the MPU. Second, the fact that participants readily judged the complements of factives to constitute direct answers, in the relevant context, bears out Simons' view that factives need not necessarily resist "assertion": that is, in the right context, factives *can* indeed embed MPU clauses.

Having established that participants can show sensitivity to the experimental manipulation of the MPU by a preceding question, and that factives can embed the MPU, in Experiment 2 we then tested whether the same type of manipulation of the MPU affects the acceptability of EV2 in Swedish. In contrast to the robust effects of MPU in Experiment 1, the MPU manipulations in Experiment 2 yielded no differences in the acceptability of EV2. Rather, the acceptability of EV2 was shown to be driven entirely by predicate class. EV2 was most acceptable for semifactives and communicative assertives. Compared with assertive predicates that explicitly convey a communicative act, epistemic (or cognitive) assertives yielded much lower ratings for EV2. And finally, EV2 was least acceptable under factives. These EV2 preferences match the data reported by Jensen & Christensen and Wiklund et al., but an account of such data that relies on MPU was not supported. Lastly, we observed an overall preference for EV3 across all predicate classes. This is in keeping with prior work suggesting that EV2, even when permitted, is never required.

These results clearly raise the question: if the deeper explanation for the effect of the different predicates is not a correlation with MPU, what is the alternative? The proposal in Wiklund et al. (2009) is that certain classes of verb (H&T's Classes A, B, and E – the "strongly and weakly assertive" predicates and the semifactives) syntactically select for a particular "size" of complement clause (specifically ForceP), while the other classes (C and D, the non-assertive, non-presuppositional predicates, and the factives) select a smaller clausal constituent that lacks this projection; V2 is syntactically possible within ForceP but not in the smaller structure. A variant of this kind of account would be to adopt the "intervention" approach put forward in Haegeman (2010; 2012), among other works, according to which A′-movement inside clauses may be blocked by other (often covert) operations of A′-movement. Thus for example Haegeman argues that English argument topicalisation inside conditionals is blocked by the A′-movement of a world operator; similarly, factives have been argued to involve movement of a factive operator, which would also interfere with other A′ movement (see for example Zanuttini & Portner 2003). If we were to assume that V2 always involves A′-movement of some phrase to the left periphery (in the examples we have been citing, this is always the subject, but its high position is evidenced indirectly by the high position of the verb, to the left of negation), this type of account gives an essentially syntactic explanation for the low acceptability of V2 in the complement to factives that we observed in our data.

What prevents such accounts from being circular is that the smaller clause size (in a "truncation" account such as the one sketched in Wiklund et al. 2009) or the operator movement (in an intervention account along the lines of Zanuttini & Portner 2003; Haegeman 2010; 2012) has semantic/pragmatic effects. Wiklund et al. propose that "MPU and the possibility of non-subject-topicalization (including unrestricted V2) are licensed by the same structural domain [...], ForceP"; Zanuttini & Portner derive the factive interpretation from the presence of the factive operator.

But the results of Experiment 2 are problematic for both of these variants, for different reasons. Taking the clause-truncation explanation first: as discussed above in §2.2, and as suggested by the quote just above, Wiklund et al. appear to take the view that factives (for example) cannot embed the MPU. But as argued by Simons, and now supported also by the results of Experiment 1, it appears that speakers *are* able to treat the complement of a factive as the MPU. Nevertheless, Experiment 2 showed that EV2 is always given low ratings in the complements of factives – *even when the context sets this up as the MPU.* In consequence, the analysis sketched in Wiklund et al. (2009) does not in fact avoid a circular account of possible environments for EV2. The independent evidence for the distribution of ForceP – the syntactic environment in which V2 is licensed, by hypothesis – was to be the possibility for an MPU interpretation. But as we have just seen, MPU interpretation *is* possible for the complement of factives, but our results show that this is not an environment in which speakers accept EV2. So now it appears to be just a lexical idiosyncrasy that factives do not readily license EV2 in their complements.

Our results are also problematic for an intervention approach to the blocking effect of factivity. Here the problem is the finding that semifactives constitute one of the most favourable environments for EV2. This finding confirms what has already been claimed on the basis of speaker judgments and corpus work (e.g. Wiklund et al. 2009; Jensen & Christensen 2013; Julien 2015) and what H&T observed for embedded root phenomena in English. But if factivity is the result of the presence of a factive operator, this operator ought also to be present in the complement to semi-factives in those environments in which the factive interpretation is not cancelled – and all the semifactive environments in our experiment were of this type (declarative non-modal sentences). Clearly a better understanding of the exact nature of the distinction between factives and semifactives is crucial here, and this is one topic that merits future investigation.

A sceptical reader may wonder whether the participants in Experiment 2 were paying sufficient attention to the discourse context manipulation and, if they were, whether the manipulation successfully established embedded MPU interpretations. We know from the first study that participants in experimental paradigms like this are capable of attending to the discourse context in evaluating a target sentence. However, the relationship between the two paradigms is indirect – in Experiment 1, the task asks participants to pay attention to how the target sentence responds to the posed question, whereas in Experiment 2, the task asks for an acceptability judgment. The tasks differ because Experiment 1 was probing factivity and MPU, whereas Experiment 2 was designed to determine the status of EV2 across different contexts. If participants in Experiment 2 effectively ignored the question context, then it might still be possible to give an explanation for the

effect of verb class on the acceptability of EV2 that appeals to MPU as a crucial factor. For example, since it is at least plausible that the frequency of embedded MPU in the complement of factives is low compared to its occurrence in other contexts, it could be that speakers draw on this knowledge when assessing the acceptability of sentences considered out of context. Finding a single task that could overcome this potential problem is tricky, but future work should look to address the indirect relationship between the two experiments just described, perhaps by including in the acceptability ratings a measure of participants' assessment of a target sentence as an appropriate answer to the posed question.

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Like so much work on the syntax of Scandinavian, the inspiration for this study can be traced back to Anders Holmberg's research (going all the way back to his dissertation, in fact). We are grateful to have the opportunity to contribute to this volume in his honour.

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